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| 10/521,118 | 01/12/2005 | Eric J. Strang | 262790US6YAPCT | 6785 |

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|---|---|
| BARBEE, MANUEL L | |
| **ART UNIT** | **PAPER NUMBER** |
| 2857 | |

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Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/521,118 | STRANG ET AL. | |
| | Examiner | Art Unit | |
| | Manuel L. Barbee | 2857 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *10 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *26-42* is/are allowed.

6)☒ Claim(s) *1-23 and 25* is/are rejected.

7)☒ Claim(s) *24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6, 8, 11-18 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sirkis et al. (WO 01/37306) in view of Williams (US Patent No. 6,133,795) and Linley et al. (US Patent No. 6,766,279).

With regard to a multi-modal resonator, Sirkis et al. teach a multi-modal resonator (Fig. 3, resonator 105; page 10, lines 9-17). With regard to a power source, as shown in claim 1, Sirkis et al. teach a VCO (Fig. 3, VCO 103; page 10, lines 9, 10). With regard to a detector, as shown in claim 1, Sirkis et al. teach a detector (Fig. 3, detector 106; page 10, lines 18-26). With regard to a controller to provide a monitoring function of a detector voltage monitor, Sirkis et al. teach a VCO bias signal processor that monitors the detector voltage (Fig. 3, VCO bias signal processor 101; page 10, line 18 - page 11, line 8). With regard to a controller to provide a controlling function of varactor voltage control, as shown in claim 1, Sirkis et al. teach using a VCO bias signal processor to control the VCO voltage (Fig. 3, VCO bias signal processor 101; page 10, lines 18-26). With regard to an user interface connected to the controller, as shown in claim 1, Sirkis et al. teach allowing the desired VCO voltage to be entered by a

keyboard or with a potentiometer (page 11, line 30 - page 12, line 10; Fig. 5; data input 110).

Sirkis et al. do not teach a Gunn diode VCO, as shown in claim 1. Williams teaches a Gunn diode VCO (col. 4, lines 28-48). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the stabilized oscillator circuit, as taught by Sirkis et al., to include a Gunn diode, as taught by Williams, because then the oscillator would have had less drift caused by temperature (Williams, col. 1, lines 24-42).

Sirkis et al. do not teach that the user interface is programmable to select at least one monitoring function and at least one controlling function, as shown in claim 1. Linley et al. teach a web-based instrument interface that generates HTML files (col. 5, line 60 - col. 6, line 23; col. 7, lines 45-52). The web server and interface software are on a computer and are upgradeable and would be programmable for many functions including controlling a monitoring or controlling function for a plasma processing diagnostic system. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the stabilized oscillator circuit, as taught by Sirkis et al., to include a instrument interface, as taught by Linley et al., because then the interface would have been easily programmable and upgradeable (Linley et al. col. 7, lines 45-52).

With regard to a man-machine interface (MMI), as shown in claim 2, Sirkis et al. teach allowing the desired VCO voltage to be entered by a keyboard or with a potentiometer (page 11, line 30 - page 12, line 10).

Sirkis et al. do not teach a remote controller, as shown in claim 3, or a remote MMI, as shown in claim 4, a graphical user interface (GUI), as shown in claim 5, or executing software on the remote controller, as shown in claim 6. Linley et al. teach remote monitoring and control of an instrument that includes a computer executing software that allows a GUI in a web browser to be used to control a remote instrument (Abstract col. 3, line 24 - col. 4, line 29). The GUI is also a MMI. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the oscillator circuit, as taught by Sirkis et al., to include a remote controller with a GUI to control a remote instrument, as taught by Linley et al., because the instrument could have been operated from many different locations (Linley et al. col. 1, lines 39-55; col. 2, line 66 - col. 3, line 7).

With regard to varying the varactor voltage using the MMI, as shown in claim 8, Sirkis et al. teach allowing the desired VCO voltage to be entered by a keyboard or with a potentiometer (page 11, line 30 - page 12, line 10). With regard to activating a lock-on circuit, setting a varactor set-point, and activating the varactor voltage set-point, as shown in claim 11, Sirkis et al. teach an algorithm for establishing a lock between the VCO frequency and the resonant frequency of the open resonator using an initial VCO voltage (page 13, lines 14-27; page 16, lines 7-28).

Sirkis et al. do not teach a GUI for presenting a plurality of setup parameters, shown in claim 12. Linley et al. teach a computer executing software that allows a GUI in a web browser to be used to control a remote instrument (Abstract col. 3, line 24 - col. 4, line 29). The GUI is also a MMI. It would have been obvious to one of ordinary skill

in the art at the time the invention was made to modify the oscillator circuit, as taught by Sirkis et al., to include a remote controller with a GUI to control a remote instrument, as taught by Linley et al., because the instrument could have been operated from many different locations (Linley et al. col. 1, lines 39-55; col. 2, line 66 - col. 3, line 7).

With regard to presenting a varactor voltage set point, as shown in claim 13, Sirkis et al. teach allowing the desired VCO voltage to be entered by a keyboard or with a potentiometer (page 11, line 30 - page 12, line 10).

Sirkis et al. do not teach a data directory panel that permits setting a directory location for storing or a GUI for providing the functions as shown in claims 14 and 15. Linley et al. teach a computer with the commonly known input and output functions including storing data in a database (col. 4, line 53 - col. 5, line 28). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the oscillator circuit, as taught by Sirkis et al., to include a remote controller with a GUI to control a remote instrument, as taught by Linley et al., because then data would have been available for later analysis.

With regard to a display panel for at least one data parameter, as shown in claim 16, Sirkis et al. teach a display (Fig. 5, display 112). With regard to a detector voltage, as shown in claim 17, Sirkis et al. teach measuring the detector voltage (Figure 3, detector 106; page 10, lines 18-26).

Sirkis et al. do not teach a plot panel for selecting at least one data parameter, as shown in claim 18, or a GUI, as shown in claim 25. Linley et al. teach a web-based instrument that includes a GUI interface that allows the user to select the particular data

to be displayed (col. 6, lines 24-48). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the oscillator circuit, as taught by Sirkis et al., to include a web based instrument that includes a GUI for controlling the data displayed, as taught by Linley et al., because the instrument could have been operated from many different locations (Linley et al. col. 1, lines 39-55; col. 2, line 66 - col. 3, line 7).

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sirkis et al. in view of Williams and Linley et al. as applied to claim 2 above, and further in view of Fujii (US Patent No. 5,936,481).

Sirkis et al., Williams and Linley et al. teach all the limitations of claim 2 upon which claim 7 depends. Sirkis et al. and Williams do not teach displaying at least one of the parameters shown in claim 7. Fujii teaches displaying detector voltage (col. 4, lines 58-64). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the oscillator circuit combination, as taught by Sirkis et al., Williams and Linley et al., to include a display, as taught by Fujii, because then visual detector monitoring would have been possible.

4. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sirkis et al. in view of Williams and Linley et al. as applied to claim 2 above, and further in view of Strang (US Patent Application Publication 2004/0267547).

Sirkis et al., Williams and Linley et al. teach all the limitations of claim 2 upon which claims 9 and 10 depend. Sirkis et al., Williams and Linley et al. do not teach a voltage sweep function or a sweep generator, as shown in claims 9 and 10. Strang

teaches a sweep function that includes sweeping the output frequency of the power source (par. 37, Figure 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the oscillator circuit combination, as taught by Sirkis et al., Williams and Linley et al., to include a sweep generator, as taught by Strang, because then the status of the processing system would have been determined (par. 9).

5. Claims 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sirkis et al. in view of Williams and Linley et al. as applied to claim 5 above, and further in view of Torii et al. (JP 03263828).

Sirkis et al., Williams and Linley et al. teach all the limitations of claim 5 upon which claims 19-23 depend. Further with regard to a resonance lock-on function, Sirkis et al. teach a resonance lock-on function, as shown above. Further, with regard to storing data to a file, as shown in claim, 21, Linley et al. teach storing data to a database, as shown above. Further, with regard to executing a control function, as shown in claim 22, or setting one data acquisition parameter, as shown in claim 23, Linley et al. teach choosing a particular parameter to be displayed from the remote instrument, as shown above.

Sirkis et al., Williams and Linley et al. do not teach a mode panel, as shown in claim 19. Torii et al. teaches selecting a stabilizing mode in plasma process (Abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the oscillator circuit combination, as taught by Sirkis et al, Williams

and Linley, to include selecting a stabilizing mode, as taught by Torii et al., because then the frequency lock-on would have been improved (Torii et al., Abstract).

***Allowable Subject Matter***

6. Claim 24 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claims 26-42 are allowed.

8. The following is an examiner's statement of reasons for allowance: Sirkis et al. do not teach a method of controlling a diagnostic system that includes activating a controller, selecting from an user interface, connected to the controller and programmable to select at least one monitoring function and at least one controlling function, a varactor voltage control in order to control a varactor voltage of the power source, selecting from the user interface a detector voltage monitor and adjusting the varactor voltage for the power source using the controller, as shown in claim 26. Strang and Fujii do not teach a method of controlling a diagnostic system that includes activating a controller, selecting from a user interface, connected to the controller and programmable to select at least one monitoring function and at least one controlling function, a varactor sweep voltage, coupling the varactor voltage to a display, coupling the transmission signal from a detector to the display, as shown in claim 29. Sirkis et al. do not a method of controlling a diagnostic system that includes activating a controller, selecting from an user interface, connected to the controller and programmable to select at least one monitoring function and at least one controlling function, a resonance lock-

on function, selecting from the user interface a varactor voltage and locking the output frequency of the power source to the cavity resonance of the multi-modal resonator by activating a varactor voltage set-point the controller, as shown in claim 33. Strang and Linley et al. do not teach a method of controlling a diagnostic system that includes activating a controller, selecting from an user interface, connected to the controller and programmable to select at least one monitoring function and at least one controlling function, and activating a varactor sweep control or a resonance lock on control, as shown in claims 37 and 40.

Each of the allowed independent claims includes limitations for selecting from an user interface, connected to the controller and programmable to select at least one monitoring function and at least one controlling function, a monitoring or controlling function. None of the cited prior art teaches using a programmable user interface to select any of the controlling or monitoring functions in a diagnostic system, as shown in the independent claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Response to Arguments***

9. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manuel L. Barbee whose telephone number is 571-272-2212. The examiner can normally be reached on Monday-Friday from 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on 571-272-2216. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Manuel L. Barbee
Examiner
Art Unit 2857

mlb
June 6, 2006

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